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(54) **TOUCH-BASED USER INTERFACES EMPLOYING ARTIFICIAL NEURAL NETWORKS FOR HDTP PARAMETER AND SYMBOL DERIVATION**

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(57) **ABSTRACT**

Systems and methods for implementing a touch user interface using an artificial neural network are described. A touch sensor with a touch surface produces tactile sensing data responsive to human touch made by a user to the touch surface. At least one processor performs calculations on the tactile sensing data and produces processed sensor data provided to at least one artificial neural network. The artificial neural networks perform operations on the processed sensor data to produce interpreted data that has user interface information responsive to the human touch. The artificial neural networks are able to distinguish among a plurality of gestures made by a user. In various implementations the touch sensor can include a capacitive matrix, pressure sensor array, LED array, or a video camera.